(54) Title: TELECOMMUNICATION MANAGEMENT SYSTEM AND USER INTERFACE
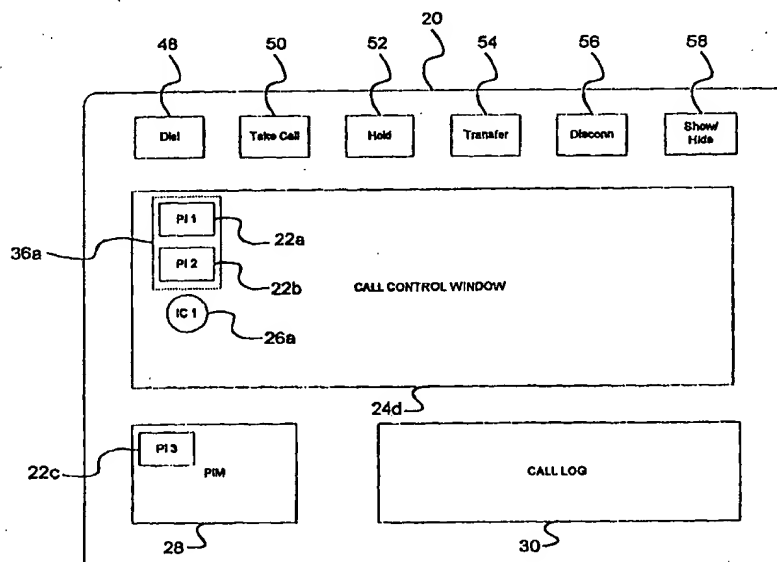
(57) Abstract

A method and a device for the management of a TAPI or TSAPI based telecommunications system through the use of a graphical user interface. Display (20) has a centrally located call control window (24d), a personal information manager graphical representation (28), a graphical representation of a call log database (30), as well as a number of buttons displayed along the top of the display. The buttons include Dial button (48), a Take Call button (50), a Hold button (52), a Transfer button (54), a Disconnect button (56), and a Show–Hide button (58). The invention displays incoming calls (26a) and outgoing calls (22a, 22b) as icons which are graphically manipulated to control the functions of the system. Conferencing system call (36a) is accomplished by the manipulation of icons and windows on the display.

TELECOMMUNICATION MANAGEMENT SYSTEM AND USER INTERFACE

Field of the Invention

5   The present invention relates generally to a system for managing a telecommunication system, and more particularly to a telecommunications management system on a personal computer with a graphical user interface display.

Background of the Invention

10   As the number of telecommunications options available increases so does the need for a method of managing those options. The two most significant communication channels are the computer and the telephone. In order to achieve greater

15 efficiency and flexibility attempts have been made to integrate the telephone and the computer.

      The earliest method for integrating telephone services and computers (also known as computer telephony integration or CTI) simply used the personal computer as a telephone dialer

20 and address book. The computer stored the names, addresses, and telephone numbers of numerous individuals. A telephone number would be selected and the computer would generate the DTMF tones to place the call (in-band dialing). The user would then pick up a handset once the phone on the other end

25 was ringing or answered.

      By the late 1980s mainframe platforms and proprietary communication application programming interfaces were the most common method of computer telephony integration. This

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resulted in limited solution to the question of how best to integrate telephones and computers as well as numerous hardware and software incompatibilities. With the advent of

5   Microsoft's Telephone Application Programming Interface (TAPI), illustrated in Fig. 1a, and the Telephony Services Application Programming Interface (TSAPI) from AT&T and Novel, illustrated in Fig. 1b, CTI is becoming a technology for the widespread integration of telephones and computers.

10 The advent TSAPI and TAPI has increased the number of communication options available to users through the integration of telephone services and computers. Unfortunately, most prior art systems require the user to learn cumbersome and nonintuitive commands in order to utilize

15 the features of the system. There is a need for a telecommunication management system which provide an easy to learn and intuitive interface for powerful TAPI and TSAPI based telecommunication systems.

20   **Summary of the Invention**
The present invention is a system for managing a telecommunication system on a personal computer with a graphical user interface. Through the use of graphical representations of communication channels accessible to the

25 user and individuals with whom to communicate, the system allows the user to manage telecommunications services by manipulating the graphical representations on a display in order to control a TAPI or TSAPI based system.

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The present invention uses the Person Identifier as the basic representation of individuals that can be contacted. Person Identifiers, also referred to as PIs, are displayed as
5   PI icons. Each Person Identifier has an associated PI record stored in memory which contains all of the necessary access numbers for the system to contact the individual associated with the particular PI. Voice mail boxes may also be graphically represented and are functional equivalents of PIs.
10 There are also graphical representations for incoming calls (displayed as Incoming Call icons), conference calls (displayed as conference call visual representations), and communication channels (displayed as Call Control Windows). The graphical representations are manipulated on a display in
15 order to use TAPI and TSAPI based features as well as to access information in databases including a Personal Information Manager (PIM) and Call Log.

One aspect of the present invention is the use of a drag and drop interface to allow the user to control the TAPI or
20 TSAPI based telecommunication system. To initiate a telephone call, the calling party uses a cursor to drag a person identifier (PI) icon into the graphical representation of a telephone communication channel (also referred to as the Call Control Window or CCW), usually represented as a window on a
25 desktop computer display. A telephone number associated with the PI icon, stored in the PI record, is then dialed by the system.

If the person placing the call wants to initiate a conference call, he or she drags multiple person identifier

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icons into the Call Control Window. If there is a need to
transfer one of the members of the conference call to another
line, the user controlling the conference call drags the PI
5   icon representing the person to be transferred out of the
window representing the conference call. If the PI icon is
dragged into a second Call Control Window the person
associated with the PI icon is transferred to the line
represented by the second CCW. Alternatively, if the PI being
10   transferred is dragged onto a second PI icon they will be
transferred to a telephone number associated with the second
PI icon. The second PI icon may represent a voice mail box.
In this fashion, conference calls can be formed and split up
into numerous groups simply by rearranging the PI icons in
15   different Call Control Windows representing different
communication channels or dragging them onto the PI icon of
the person they should be transferred to. It is also possible
to transfer more than one member out of a conference call to
another line simply by selecting several PI icons as a group
20   and dragging them into another telephone control window
representing a different communication channel or a separate
PI icon outside of the original telephone control window.
Additionally, the user may also drag and drop a selected PI
icon or group of PI icons onto a hold icon or disconnect icon.
25   Another aspect of the present invention is that calls may
also be transferred to another individual by dragging a
representation of a call out of a Call Control Window that
presents incoming calls onto the PI of the person to whom the
call is to be transferred. Alternatively, the called party

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could initiate a call to the party to whom the call is going
to be transferred in a second Call Control Window and then
conference in the incoming call by dragging it into that
5   second CCW.

   Still another aspect of the present invention is that it
contains an integrated contact list containing the Person
Identifier records which is automatically updated every time a
call is placed or received. The contact list can be
10 maintained by any of numerous Personal Information Managers
(PIMs). The call log database can also be used to maintain
the contact list. Each record in the contact list has a
Person Identifier icon associated with it that can be used to
initiate a telecommunication function by dragging PIs out of
15 the contact list and into a Call Control Window.

   The present invention uses Automatic Number
Identification (ANI also known as Caller ID) to identify
outside callers and information from the telephone system to
identify internal callers. Upon receipt of an incoming call,
20 the system searches the contact list for a matching record and
displays the record before the call is answered.

   The system logs all incoming and outgoing calls and
maintains a user accessible record of calling activity which
may be broken down chronologically or by individual. Incoming
25 and outgoing calls are displayed in the call log graphical
representation. Incoming calls are also displayed as an
Incoming Call (IC) icon in the Call Control Window associated
with the line to which their call is directed. In systems in
which there is only one Call Control Window, the incoming

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calls can be displayed in the order they were received. The

system may also provide different types of incoming calls with

different types of incoming call icons (internal, local, long

5   distance, toll free, preferred customer, etc.)

Still another aspect of the present invention is the

ability to control the use of different communication options

(also referred to as access methods) with the same type of

graphical manipulation. Person Identifier icons can be used

10   to access all of the access numbers which are associated with

the person in a memory called a PI record. One access number

will be the default number such as an office phone number or a

cell phone number. However, the present invention allows the

user to select alternate access methods using simple graphical

15   manipulation. Dragging a PI onto a representation of another

type of access method will cause the system to attempt to

contact the party through that type of access method.

Dragging a PI icon on to the representation of an access

method such as a pager will cause that person to be paged and

20   will bring up a window requesting the pager number if one is

not already associated with that access method within the PI

record and will ask for the text to be transmitted if it is a

display pager. The user can easily select office, home, fax,

mobile, or pager access methods quickly and easily. A

25   different Call Control Window may be provided for each access

method or an option window may be clicked to select the access

method to be used with a single CCW. Alternatively, a

graphical button or key may be used to specify the access

method to be used). The method for contacting the individual

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associated with the PI can be selected by actuating a

graphical button before the PI icon is dragged into the call

control window.   The present invention also allows the user to

5   specify which of these methods is the default to be dialed

when the PI is dragged into the call control window.

These and other features of the present invention will be

more fully appreciated when considered in light of the

following detailed description and drawings.

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Brief Description of the Drawings

Fig. 1a is a functional diagram of a prior art TAPI based

telephone system.

Fig. 1b is a functional diagram of a prior art TSAPI

15   based telephone system.

Fig. 2a is the display of the present invention.

Fig. 2b is the display of the present invention.

Fig. 2c is the display of the present invention.

Fig. 2d is the display of the present invention.

20   Fig. 2e is the display of the present invention.

Fig. 3 is the display of the present invention.

Detailed Description of the Invention

TAPI, see Fig. 1a, is a method for integrating telephone

25   services and computers so as to allow a computer to control a

user's telephone 2 (dialing the telephone, transferring calls,

etc.) and receive caller ID information into the user's

computer 6 allowing information about the calling party to be

displayed before the phone is answered.   TAPI is a desktop-

centric method, in which a desktop PC is directly connected to

the telephone on the desktop **2** and the public switch **8**. The

public switch **8** connects the user's telephone to another

5   telephone **4**. TAPI includes the specification for the physical

link between a telephone and its controlling computer,

typically the telephone user's desktop PC **6**. The emphasis is

on first-party control, whoever is connected to the call

controls the call. Once a call is transferred, the

10   transferring party loses control of the call.

TSAPI, see Fig 1b, is another method for integrating

telephone services and computers and is based on third party

control, that is calls can be tracked as they are transferred.

With TSAPI, first-party type control is performed from the

15   Private Branch Exchange(PBX) **10** not the user's telephone **2** as

in TAPI connected to the desktop computer **6**. To place a call,

the PBX **10** dials the telephone number, through the public

switch **8** if it is to an outside telephone **4** or directly if it

is to an inside telephone **5**, and then transfers the call to

20   the called telephone **12**. TSAPI specifies the physical link

between a PBX server **12** and a PBX **10**. TSAPI allows the

computer to instruct the PBX **10** to place outgoing calls, send

calls to a particular telephone, hold calls, conference calls,

report the status of calls, and other typical PBX functions.

25   Figure 2a illustrates a typical implementation of the

present invention showing a display **20** having several person

identifier icons **22a**, **22b**, and **22c** and a series of call

control windows (also referred to as communication line visual

representations) **24a**, **24b**, and **24c**. Incoming calls are

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represented by incoming call icons **26a** and **26b** in the call

control windows **24b** and **24c** respectively. Individual call

control windows may represent specific telephone lines or they

5   may be representations of different types of telephone lines.

In a system where each call control window **24** represents

a specific telephone line, call control window **24b** is

associated with and represents telephone line **B** and call

control window **24c** is associated with and represents telephone

10   line **C**. When there is an incoming call on line **B** it will

appear as an incoming call icon **26a** in call control window

24b. Likewise, an incoming call on line **C** will be represented

by incoming call icon **26b** in call control window **24c**.

The graphical user interface (GUI) of the present

15   invention is generated in Microsoft Windows 3.11, Windows 95,

and Windows NT using well known methods for displaying windows

and icons on a computer display as part of the respective

operating systems.

Each Person Identifier icon **22** has a person identifier

20   record associated with it. The person identifier record

contains a default telephone number that is to be used unless

another number is specified. One method for selecting an

alternative telephone number is to provide the user with a

pull down menu listing the telephone numbers associated with

25   the person identifier when the associated person identifier

icon is selected and a specified key is activated (left

clicking the mouse, space bar, F1 key, etc.).

The personal information management database and the call

log database are also given graphical representations **28** and

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30 on the display 20. This allows the PIM and call log to be

manipulated graphically in the same manner as the rest of the

telecommunication management system. Every outgoing and

5   incoming call generates a record which is stored in the call

log database. This record contains information about the

telephone call including date, time, telephone number, and the

caller/callee's name, if available. If a person identifier

does not exist for the caller/callee, the system may generate

10 a person identifier record based upon the information in the

call log database.

Incoming call icons 26 are generated whenever incoming

telephone calls are received by the system and directed to the

telephone 2 associated with the user's computer 6. If the

15 call control windows 24 represent specific lines or types of

lines, then the incoming call icons 26 will appear in the

window 24 associated with the telephone line or type of line

on which the call was received. If the call control windows

24 are not associated with specific lines then the calls will

20 appear in the call control windows in the order in which they

are received. If there is only one call control window 24, as

illustrated in figure 3, then the calls can be presented in a

user specified list format.

If automatic number identification is available, then the

25 system will display the telephone number as well as any

information that may be associated with that telephone number

either in the personal information manager database, a person

identifier record or a secondary database of telephone

numbers. If there is a name associated with the incoming

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telephone call's phone number in an available database, then the name is displayed along side the incoming call icon display in addition to or in place of the phone number. The

5   user may also edit the name associated with an incoming phone number. If the phone number is not available through automatic number identification (ANI) or from the PBX, then the system will display a message that no information is available.

10   The call log data base window 30 keeps track of all telephone calls either initiated or received by the telephone line or lines associated with the call control windows 24a, 24b and 24c. Figure 2a, shows a first incoming call icon 26a displayed in call control window 24b which is associated with

15   telephone line A and a second incoming call icon 26b displayed in call control window 24c which is associated with telephone line B.

Figure 2b illustrates the method of drag and drop dialing and shows the drag route 32. In drag and drop dialing, a PI

20   icon 22a is selected with a cursor and is dragged graphically across the screen display 20 into call control window 24a. Upon release of the PI icon in call control window 24a, the system dials the default telephone number associated with person identifier icon 22a on the telephone line associated

25   with the control window 24a.

Transferring a call from one call control window to another call control window is illustrated by drag route 34. Figure 2b illustrates a method by which an incoming call on telephone line B, which is associated with and represented by

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call control window **24b**, can be connected to another party on

line **C**, which is associated with and represented by call

control window **24c**.   In call control window to call control

5   window transferring, the incoming call icon **26a** is dragged

from call control window **24b** and dropped into call control

window **24c**.   This causes the system to connect the incoming

call on telephone line **B** to another party (not shown) who is

already connected on telephone line **C**.

10   Figure 2c, illustrates the method of drag and drop

conference calling in the present invention illustrated by

drag routes **38**.   In drag and drop conference calling, a first

person identifier icon **22a** and a second person identifier icon

22b are dragged into a call control window **24a**.   The system

15   dials the telephone numbers associated with the person

identifier icons and conferences them together with the user.

Once the conference call is initiated, a conference call

visual representation **36a** is generated.

       Figure 2c also illustrates transferring person identifier

20   information into the personal information management database

by dragging and dropping the person identifier icon **22c** onto

the personal information database visual representation **28**.

This causes the system to copy information associated with

person identifier icon **22c** to the PIM database.

25   Figure 2d illustrates incoming call to person identifier

transferring as shown by drag route **42**.   Incoming call to

person identifier icon transferring is accomplished by

dragging an incoming call icon **26c** from call control window

24b and dropping the incoming call icon **26c** onto a person

identifier icon **22a**. This transfers or forwards the telephone
call associated with the incoming call icon to the default
telephone number associated with person identifier icon **22a**.

5   Figure 2d also illustrates conferencing by dragging
person identifiers **22b** and **22c** along drag routes **44** into call
control window **24c** where incoming call icon **26d** is already
displayed. This causes a conference call to be generated
involving the user, incoming call **26d** and person identifiers
10   **22b** and **22c**. Once the conference call is generated, a
conference call visual representation **36b** is displayed.

Figure 2e illustrates with drag route **46** the process of
transferring someone out of a conference call. This is
accomplished by dragging a person identifier **22d** out of a
15   conference call visual representation **36c**. If the person
identifier icon **22d** is dragged on top of another person
identifier icon **22a** and then dropped, the person associated
with icon **22d** will have their call transferred to the default
telephone number associated with person identifier icon **22a**.
20   If the person identifier is dragged out of the conference call
but not dropped into a call control window or onto a person
identifier icon, the system may be configured to either place
the party associated with the person identifier **22d** on hold or
disconnect them.

25   Figure 2e also illustrates with drag route **48** the process
of conference call merging. Conference call merging is
accomplished by dragging a conference call visual
representation **36d** from one call control window **24c** and
dropping it into another call control window **24b** where a

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conference call visual representation **36e** is already active, which merges the two conference calls together.

Figure 3 illustrates a preferred embodiment of the
5   present invention. Display **20** has a centrally located call control window **24d**, a personal information manager graphical representation **28**, a graphical representation of a call log database **30**, as well as a number of buttons displayed along the top of the display. The buttons include a dial button **48**,
10   a take call button **50**, a hold button **52**, a transfer button **54**, a disconnect button **56**, and a show/hide button **58**. All of the methods illustrated in the previous embodiments of the invention are performed exactly the same way in the embodiment illustrated in Figure 3. However, instead of having multiple
15   call control windows, each associated with a specific telephone line, this embodiment utilizes a single call control window and does not indicate which telephone line a call is coming in on or going out on by means of different call control windows. The line a call is coming in on or going out
20   on can be illustrated by varying the person identifier icons **22** or the incoming call icons **26**. The buttons provided along the top of the display provide the user with an alternative method for controlling the telecommunications system.

From the foregoing teachings, it can be appreciated by
25   one skilled in the art that a new, novel, and nonobvious telecommunication management system has been disclosed. It is to be understood that numerous alternatives and equivalents will be apparent to those of ordinary skill in the art, given the teachings herein, such that the present invention is not

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to be limited by the foregoing description but only by the appended claims.

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I claim:

1)   A method for a communications management system including
     a display to place a call to a party to be called,
     comprising the steps of:

     a) displaying on said display a person identifier
        icon having an associated telephone number;

     b) displaying on said display a first communication
        control visual representation;

     c) receiving user input in the form of directing a
        cursor on said display and actuating a key,
        which user input:

        I) specifies said person identifier icon by
           placing said cursor on said person
           identifier icon and actuating said key,

        ii) specifies said first communication control
            visual representation by placing said
            cursor on said first communication control
            visual representation and actuating said
            key, and

        iii) specifies an association between said
             first communication control visual
             representation and said person identifier
             icon; and

     d) placing a call to said telephone number
        associated with said person identifier icon.

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2)   The method of claim 1 wherein the step of receiving user

        input which specifies an association between said

        first communication control visual representation

        and said person identifier icon further comprises:

        after receiving a specification of said person

              identifier icon, causing the person identifier

              icon to follow the cursor as it is moved to

              said first communication control visual

              representation.

3)   The method of claim 1 wherein the communications

        management system has access to a plurality of

        communications lines, further comprising the step

        of:

              a) displaying on said display a second

              communication control visual representation at

              the same time that said first communication

              control visual representation is displayed on

              said display.

              b) receiving user input in the form of directing a

              cursor on said display and actuating a key,

              which user input specifies an association

              between said second communication control

              visual representation and said person

              identifier icon; and

              c) connecting said call placed on a first

              communications line associated with said first

              communication control visual representation to

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a second communication line associated with

said second communication control visual

representation.

4) The method of claim 1 wherein the communications

management system further comprises the steps of:

displaying on said display a hold function icon;

receiving user input in the form of directing a

cursor on said display and actuating a key,

which user input specifies an association

between said hold function icon and said person

identifier icon; and

placing the telephone number associated with said

person identifier on hold.

5) The method of claim 1 wherein said person identifier icon

is associated with multiple phone numbers.

6) The method of claim 5 wherein one of the multiple

telephone numbers associated with said person

identifier icon is a default phone number.

7) The method of claim 5 wherein the communications

management system further comprises the steps of:

receiving user input in the form of directing a

cursor on said display and actuating a key,

which user input specifies said person

identifier icon and selects one of said

multiple telephone numbers associated with said
person identifier icon.

8) A method for a communications management system including
    a display to copy a record to a database, comprising
    the steps of:
    a) receiving input specifying a name and telephone
       number;
    b) storing said name and telephone number in data
       fields in a record;
    c) displaying on said display a person identifier
       icon associated with said record;
    d) displaying a database visual representation
       associated with a database;
    e) receiving user input in the form of directing a
       cursor and actuating a key which input
       specifies an association between the person
       identifier icon and the database visual
       representation; and
    f) copying said name and telephone number to said
       database.

9) The method of claim 8, wherein said name and telephone
    number are specified through user input.

10) The method of claim 8, wherein said telephone number is
    specified by the telephone network the first time an

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incoming call is received from that telephone
number.

11) A method for a communications management system including
     a display for a user to place a conference call to
     multiple parties, comprising the steps of:
     a) displaying on said display a first person
        identifier icon associated with a first
        telephone number for a first party;
     b) displaying on said display a second person
        identifier icon associated with a second
        telephone number for a second party;
     c) displaying on said display a first communication
        control visual representation;
     d) receiving user input in the form of directing a
        cursor on said display and actuating a key
        which specifies an association between said
        first person identifier icon, said second
        person identifier icon, and said first
        communication control visual representation;
        and
     e) establishing a first conference call by dialing
        said first telephone number on a first
        communications line, dialing said second
        telephone number on a second communications
        line and connecting both lines to a telephone
        for the user.

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12)   The method of claim 11, further comprising the step of:

    a) displaying a first conference call visual representation associated with said first conference call;

    b) receiving user input in the form of directing a cursor on said display and actuating a key which disassociates said first person identifier icon from said second person identifier icon;

    c) terminating the display of said first conference call visual representation; and

    d) disconnecting said first communications line from said second communications line and said telephone for the user.

13)   The method of claim 12, further comprising the steps of:

    a) displaying on said display a second communication control visual representation associated with a third communications line;

    b) receiving user input in the form of directing a cursor on said display and actuating a key which associates said first person identifier icon with said second communication control visual representation; and

    c) connecting said first communications line to said third communications line.

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14) The method of claim 11, further comprising the steps of:

    a) displaying a first conference call visual representation associated with said first conference call;

    b) displaying on said display a second conference call visual representation associated with a second conference call on a third communications line and a fourth communications line;

    c) receiving user input in the form of directing a cursor on said display and actuating a key which input associates said second conference call visual representation with said first conference call visual representation; and

    d) establishing a merged conference call by connecting said first communication line said second communications line, said third communications line and said fourth communications line.

15) A method for transferring a call in a communications management system including a display, comprising the steps of:

    a) connecting a telephone call;

    b) displaying on said display a call icon associated with said telephone call;

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c) displaying on said display a person identifier
   icon;

d) receiving user input in the form of selecting
   said telephone call icon and associating it
   with said person identifier icon; and

e) transferring said incoming telephone call to a
   communications line associated with said person
   identifier icon.

16) The method of claim 15 wherein the communications line
    associated with said person identifier icon connects
    to a voice mail box.

17) The method of claim 15 wherein transferring said incoming
    telephone call to said communications line places
    the call on hold.

18) A device for a communications management system including
    a display to place a call to a party to be called,
    comprising:
    a) means for displaying on said display a person
       identifier icon having an associated telephone
       number;
    b) means for displaying on said display a first
       communication control visual representation;
    c) means for receiving user input in the form of
       directing a cursor on said display and
       actuating a key, which user input:

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i) specifies said person identifier icon by
placing said cursor on said person
identifier icon and actuating said key,

ii) specifies said first communication control
visual representation by placing said
cursor on said first communication control
visual representation and actuating said
key, and

iii) specifies an association between said
first communication control visual
representation and said person identifier
icon; and

d) means for placing a call to said telephone number
associated with said person identifier icon.

19) The device of claim 18 wherein the a means for receiving
user input which specifies an association between
said first communication control visual
representation and said person identifier icon
further comprises:
means for causing the person identifier icon to
follow the cursor as it is moved to said first
communication control visual representation.

20) The device of claim 18 wherein the communications
management system has access to a plurality of
communications lines, further comprising:

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a) means for displaying on said display a second
communication control visual representation at
the same time that said first communication
control visual representation is displayed on
said display.

b) means for receiving user input in the form of
directing a cursor on said display and
actuating a key, which user input specifies an
association between said second communication
control visual representation and said person
identifier icon; and

c) means for connecting said call placed on a first
communications line associated with said first
communication control visual representation to
a second communication line associated with
said second communication control visual
representation.

21) The device of claim 18 wherein the communications
management system further comprises the steps of:

a) means for displaying on said display a hold
function icon;

b) means for receiving user input in the form of
directing a cursor on said display and
actuating a key, which user input specifies an
association between said hold function icon and
said person identifier icon; and

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c) means for placing the telephone number associated
with said person identifier on hold.

22) The device of claim 18 wherein said person identifier
icon is associated with multiple phone numbers.

23) The device of claim 22 wherein one of the multiple
telephone numbers associated with said person
identifier icon is a default phone number.

24) The device of claim 22 wherein the communications
management system further comprises of:
means for receiving user input in the form of
directing a cursor on said display and
actuating a key, which user input specifies
said person identifier icon and selects one of
said multiple telephone numbers associated with
said person identifier icon.

25) A device for a communications management system including
a display to copy a record to a database,
comprising:
a) means for receiving input specifying a name and
telephone number;
b) means for storing said name and telephone number
in data fields in a record;
c) means for displaying on said display a person
identifier icon associated with said record;

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d) means for displaying a database visual
representation associated with a database;

e) means for receiving user input in the form of
directing a cursor and actuating a key which
input specifies an association between the
person identifier icon and the database visual
representation; and

f) means for copying said name and telephone number
to said database.

26) The device of claim 25, wherein said name and telephone
number are specified through user input.

27) The device of claim 25, wherein said telephone number is
specified by the telephone network the first time
an incoming call is received from that telephone
number.

28) A device for a communications management system including
a display for a user to place a conference call to
multiple parties, comprising:

a) means for displaying on said display a first
person identifier icon associated with a first
telephone number for a first party;

b) means for displaying on said display a second
person identifier icon associated with a second
telephone number for a second party;

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c) means for displaying on said display a first
   communication control visual representation;

d) means for receiving user input in the form of
   directing a cursor on said display and
   actuating a key which specifies an association
   between said first person identifier icon, said
   second person identifier icon, and said first
   communication control visual representation;
   and

e) means for establishing a first conference call by
   dialing said first telephone number on a first
   communications line, dialing said second
   telephone number on a second communications
   line and connecting both lines to a telephone
   for the user.

29) The method of claim 28, further comprising:

a) means for displaying a first conference call
   visual representation associated with said
   first conference call;

b) means for receiving user input in the form of
   directing a cursor on said display and
   actuating a key which disassociates said first
   person identifier icon from said second person
   identifier icon;

c) means for terminating the display of said first
   conference call visual representation; and

d) means for disconnecting said first communications
   line from said second communications line and
   said telephone for the user.

30) The device of claim 29, further comprising:
   a) means for displaying on said display a second
      communication control visual representation
      associated with a third communications line;
   b) means for receiving user input in the form of
      directing a cursor on said display and
      actuating a key which associates said first
      person identifier icon with said second
      communication control visual representation;
      and
   c) means for connecting said first communications
      line to said third communications line.

31) The method of claim 28, further comprising:
   a) means for displaying a first conference call
      visual representation associated with said
      first conference call;
   b) means for displaying on said display a second
      conference call visual representation
      associated with a second conference call on a
      third communications line and a fourth
      communications line;
   c) means for receiving user input in the form of
      directing a cursor on said display and

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actuating a key which input associates said

second conference call visual representation

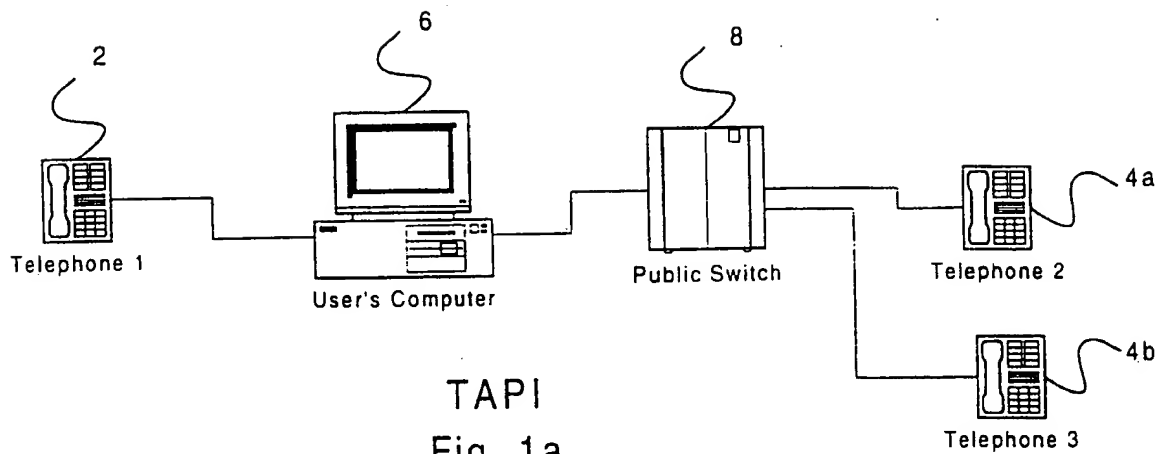with said first conference call visual

representation; and

d) means for establishing a merged conference call

by connecting said first communication line

said second communications line, said third

communications line and said fourth

communications line.

32)   A device for transferring a call in a communications

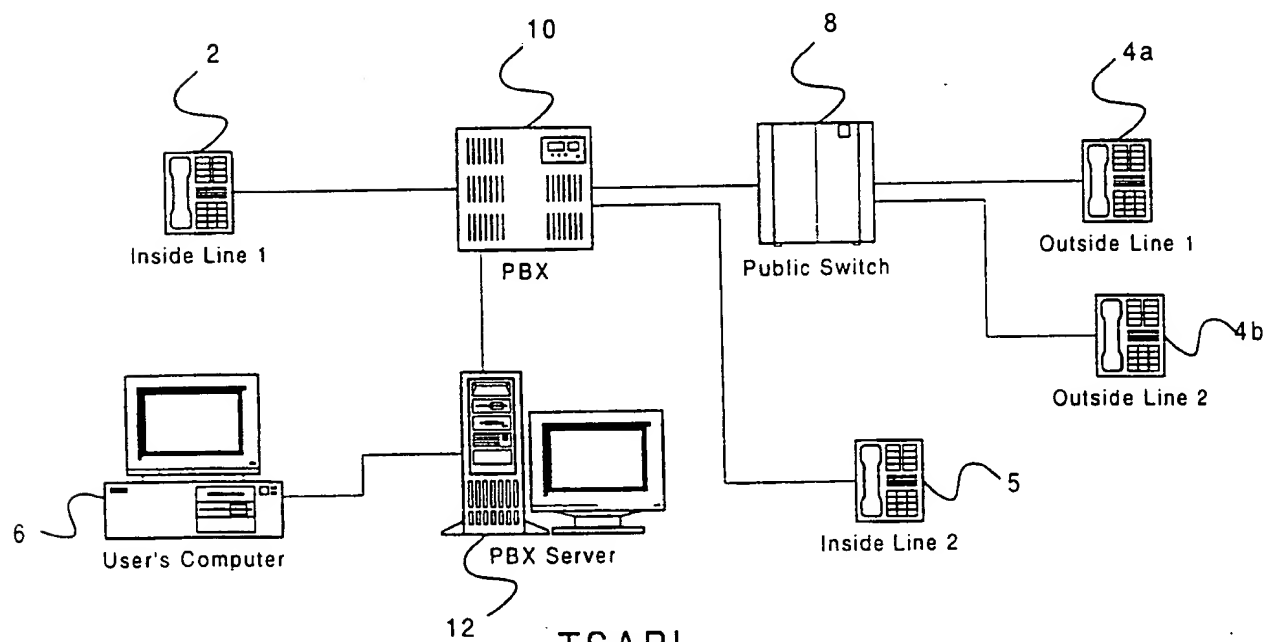management system including a display, comprising

the steps of:

a) means for connecting a telephone call;

b) means for displaying on said display a call icon

associated with said telephone call;

c) means for displaying on said display a person

identifier icon;

d) means for receiving user input in the form of

selecting said telephone call icon and

associating it with said person identifier

icon; and

e) means for transferring said incoming telephone

call to a communications line associated with

said person identifier icon.

33) The device of claim 32 wherein the communications line associated with said person identifier icon connects to a voice mail box.

34) The device of claim 32 wherein transferring said incoming telephone call to said communications line places the call on hold.

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SUBSTITUTE SHEET (RULE 26)
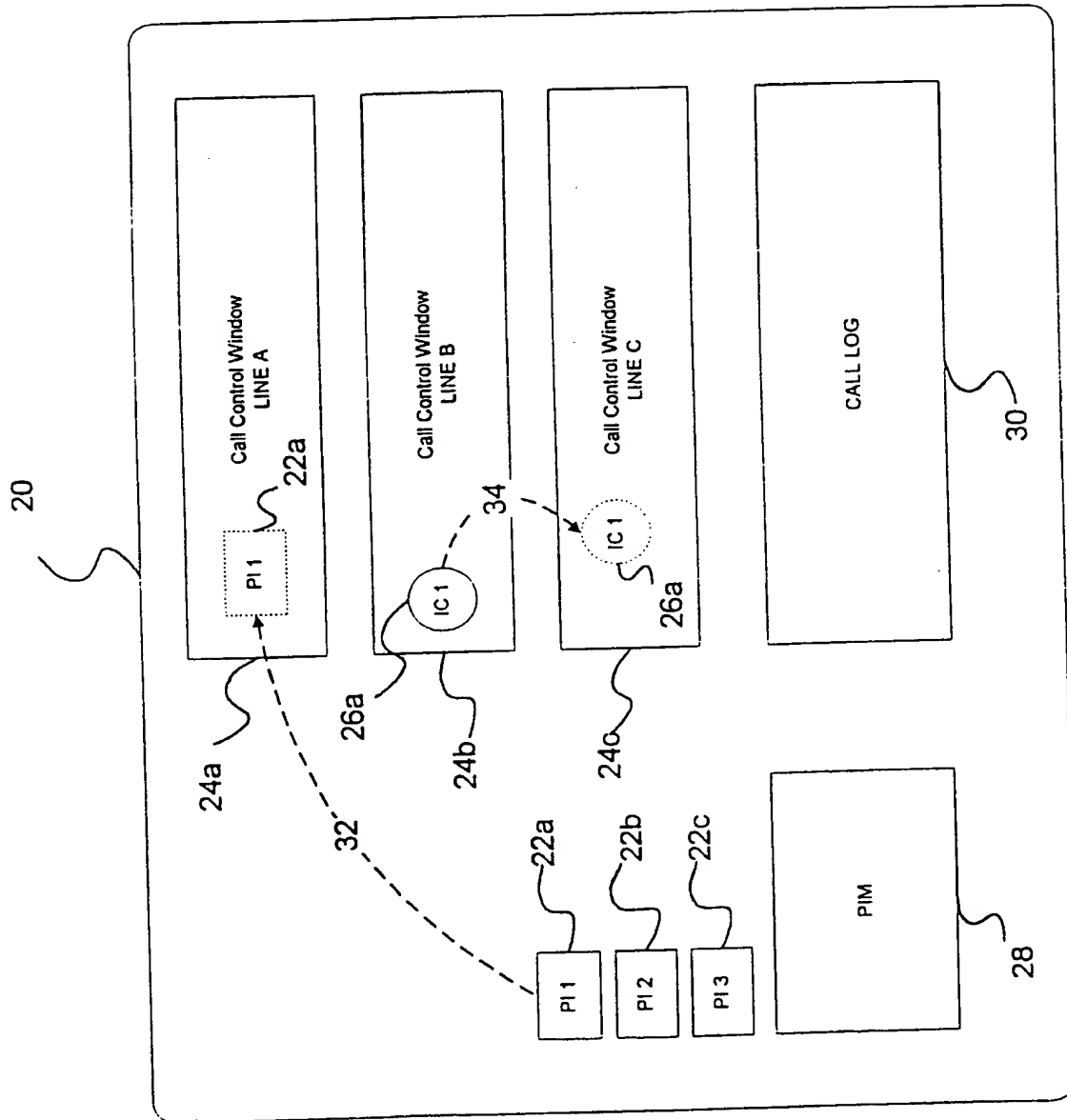
-1/7-

TAPI
Fig. 1a
(prior art)

TSAPI
Fig. 1b
(prior art)

Fig. 2a

Fig. 2b

-4/7-
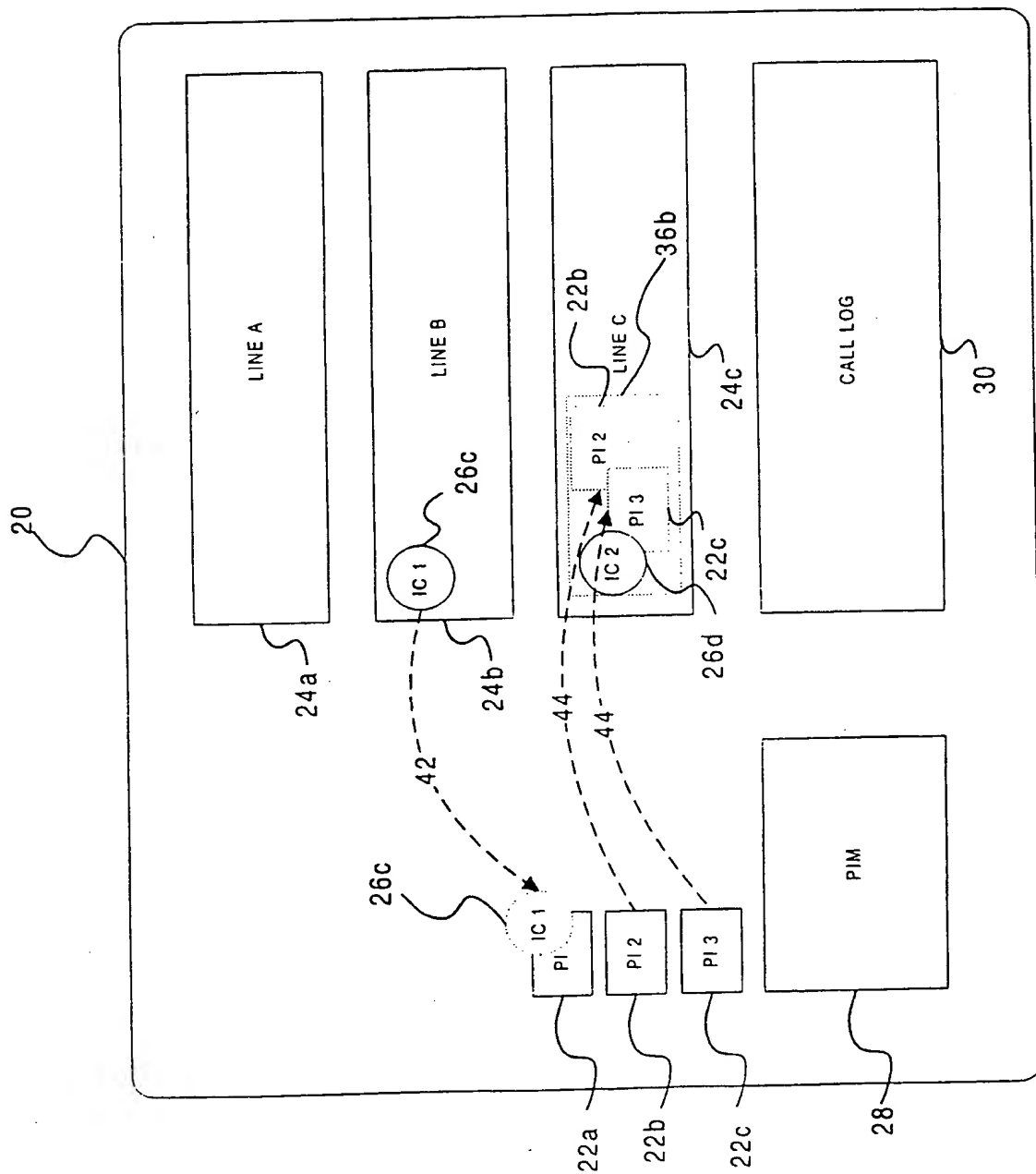

Fig. 2c

Fig. 2d

Fig. 2e

-7/7-

48 Dial
50 Take Call
52 Hold
54 Transfer
56 Disconn
58 Show/Hide
20
22a PI 1
22b PI 2
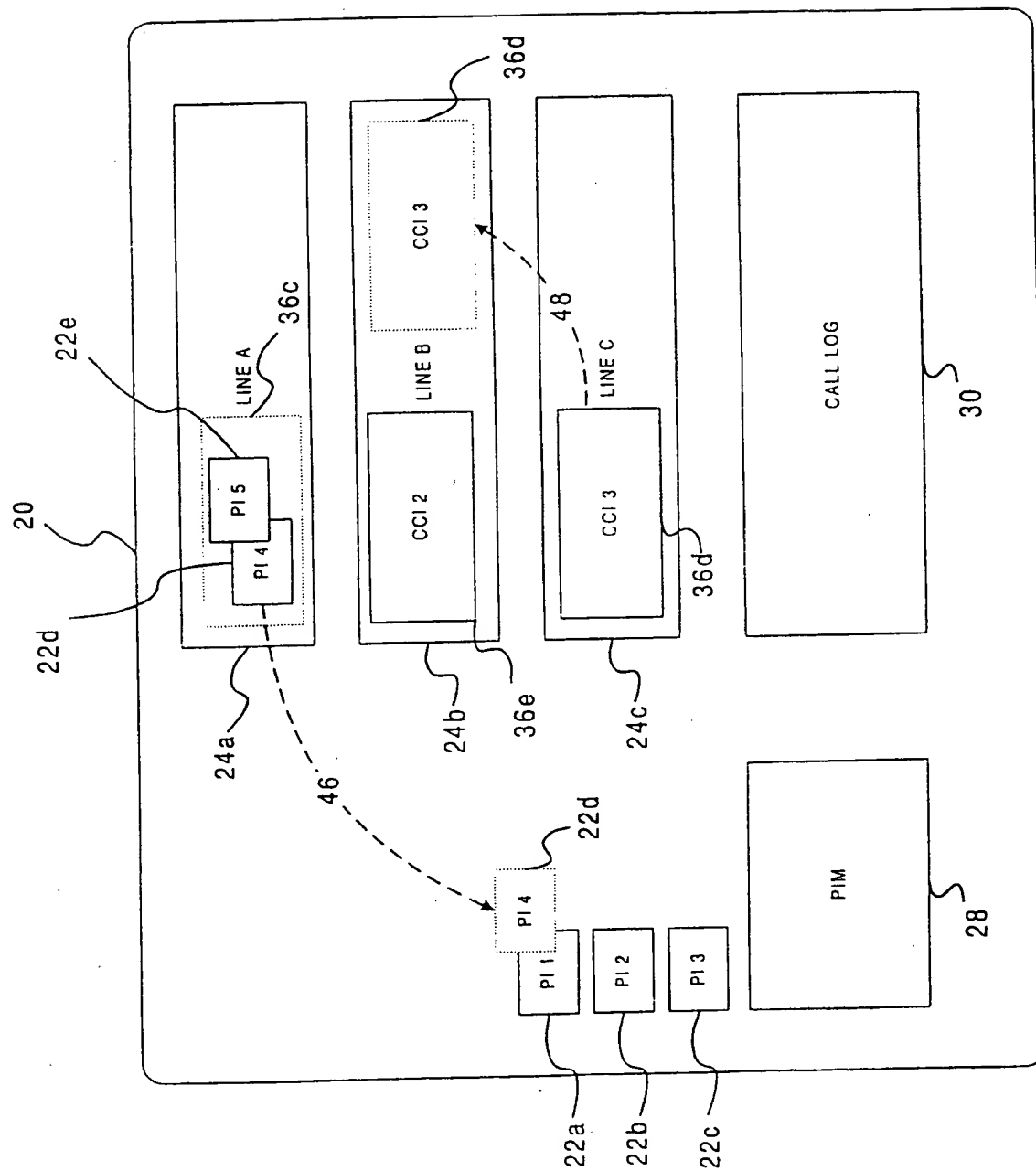26a IC 1
36a
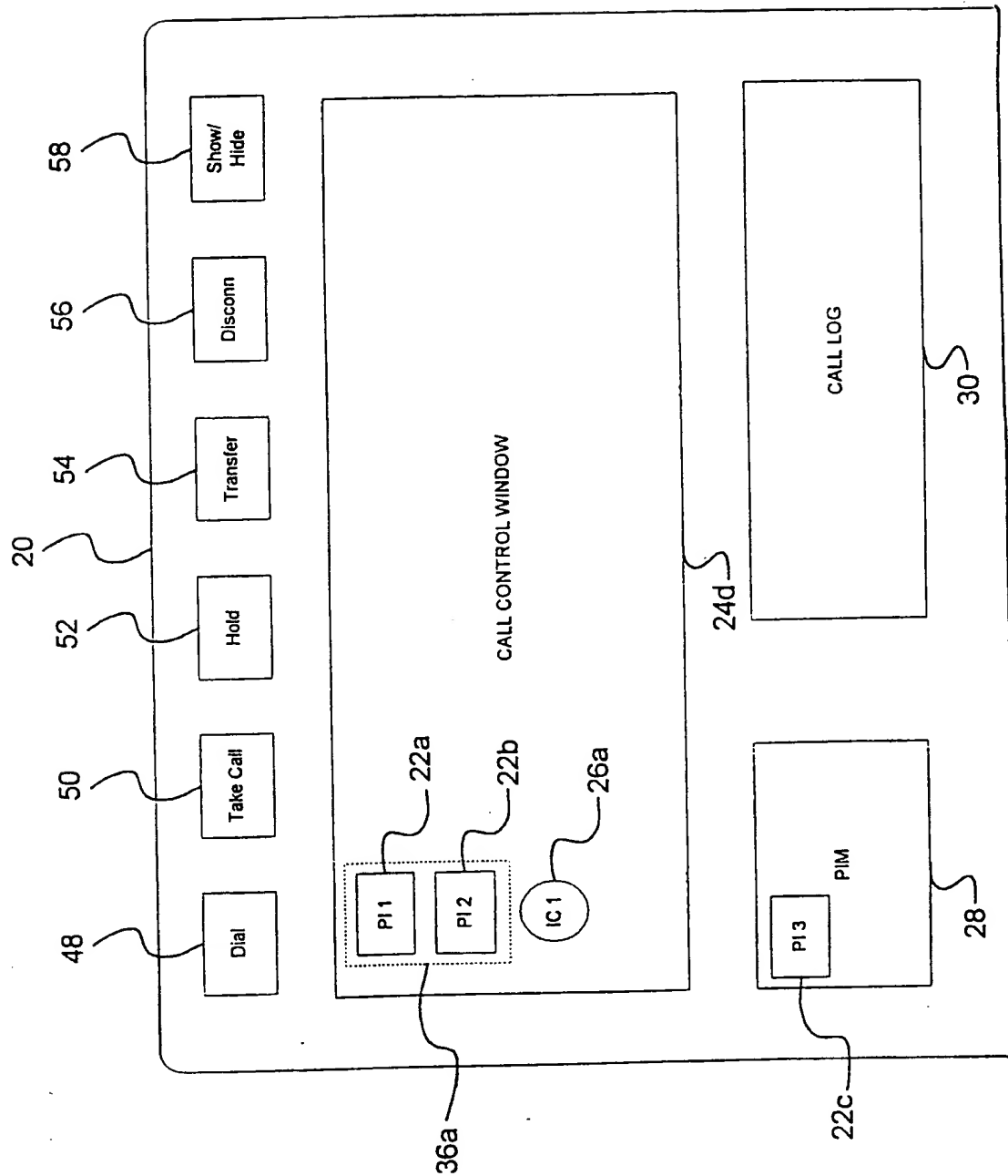CALL CONTROL WINDOW
24d
22c
PI 3
PIM
28
CALL LOG
30
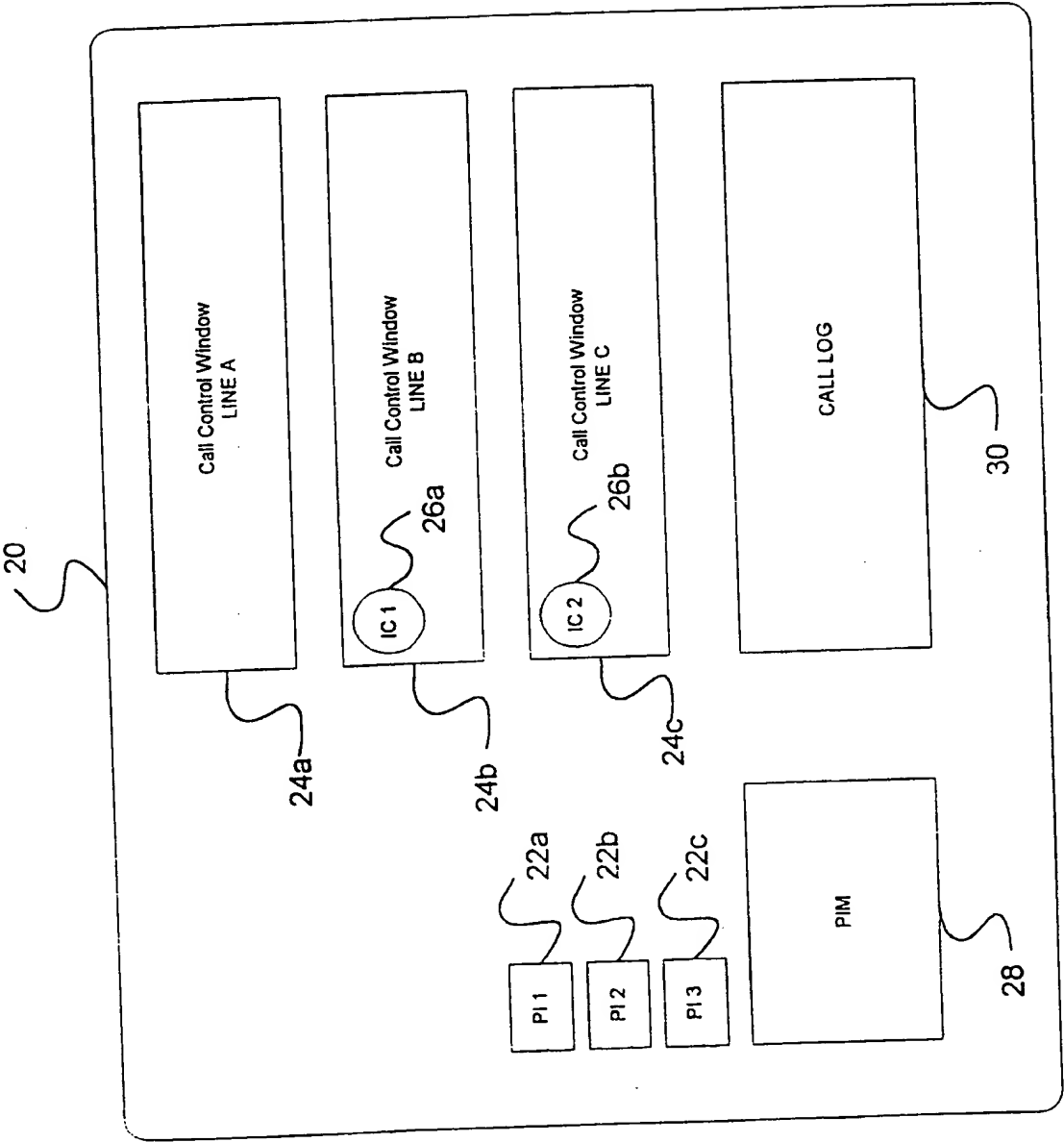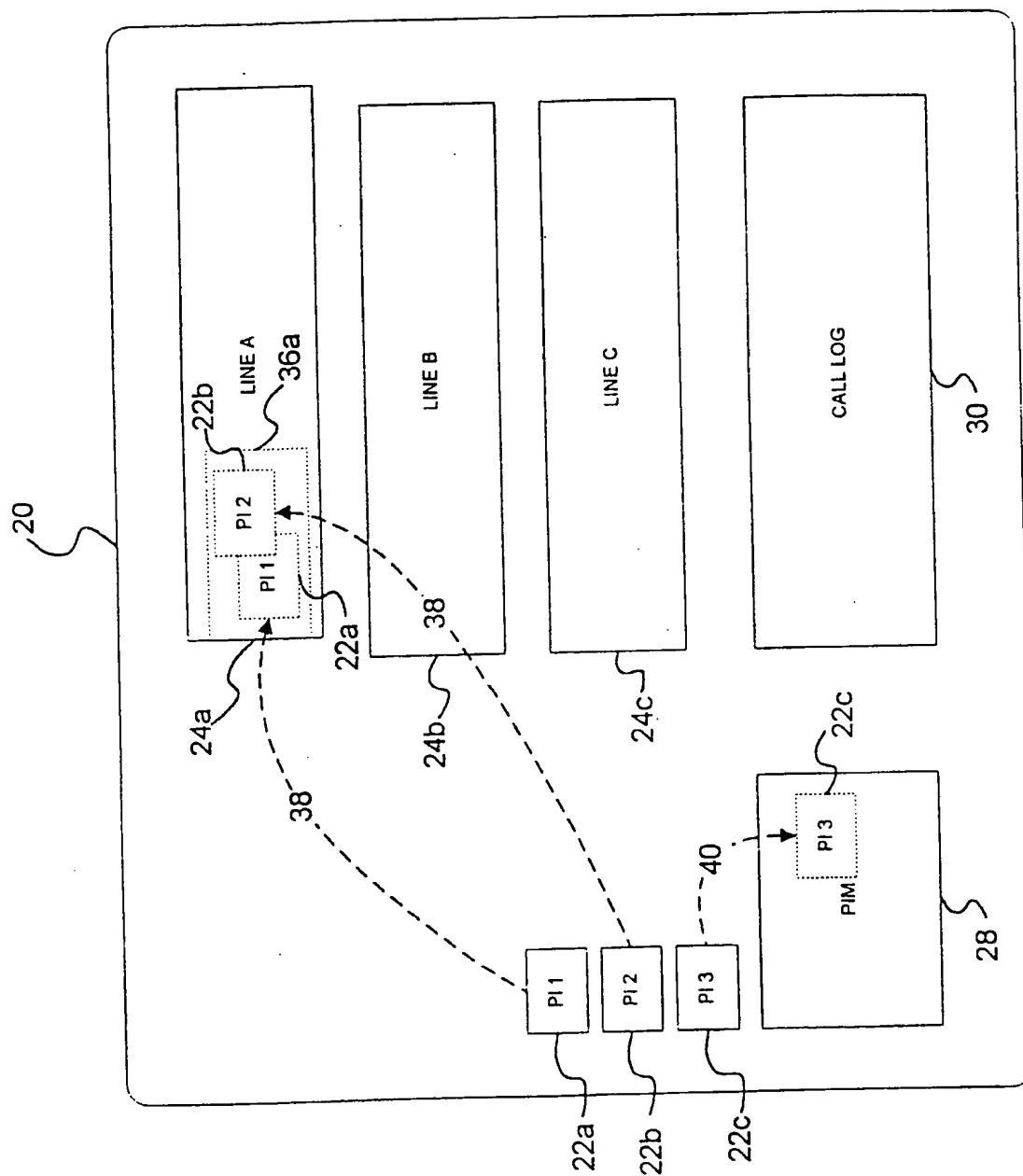
Fig. 3

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US97/20952

A. CLASSIFICATION OF SUBJECT MATTER

IPC(6) :H04M 3/42

US CL :379/201, 202, 204, 207, 211

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 379/201, 202, 204,207, 211,212

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

APS search terms: telephone application programming interface or TAPI, graphical user interface#, conferenc?

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ⎯⎯ Y	US, A, 4,953,159 (HAYDEN et al) 28 August 1990, col. 11, lines 37-47, col. 15, lines 1-4, col. 17, lines 50-53, col. 28, lines 32-45.	1, 3-14, 18, and 20-31 ⎯⎯⎯⎯ 2, 15-17, 19, and 32-34
Y,P	US, A, 5,631,954 (EVANS et al) 20 May 1997, col. 8, lines 15-26.	2 and 19
Y,P	US, A, 5,642,410 (WALSH et al) 24 June 1997, Figs. 11c, 16-17.	15-17 and 32-34

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

* Special categories of cited documents:	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A" document defining the general state of the art which is not considered to be of particular relevance	
"E" earlier document published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O" document referring to an oral disclosure, use, exhibition or other means	
"P" document published prior to the international filing date but later than the priority date claimed	"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
02 FEBRUARY 1998	14 APR 1998

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Form PCT/ISA/210 (second sheet)(July 1992)★